IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In the Patent Application of:	
CLEMENS JUNG ET AL.	Group Art Unit: 1746
Serial No.: 0	Examiner: EL-Arini, Zeinab E.
Filed: November 14, 2003	
For: METHOD OF OPERATING A DISHWASHER WITH A CENTRAL CONTROL UNIT	

APPEAL BRIEF

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Appeal Brief pursuant to 37 C.F.R. §41.37 in support of Applicants' appeal of the Final Rejection of the Examiner, mailed November 23, 2005, of claims 2, 8-10, and 12-20. Each of the topics required by 37 C.F.R. §41.37 is presented herewith and is labeled appropriately.

I. REAL PARTY IN INTEREST

Whirlpool Corporation, having offices in Benton Harbor, Michigan ("Whirlpool" or "Assignee") is the real party in interest of the present application. An assignment of all rights in the present application to Whirlpool was executed by the inventors and recorded in the U.S. Patent and Trademark Office at Reel 014362, Frame 0695.

II. Related Appeals and Interferences

There are no appeals or interferences related to the present application of which Appellants, Appellants' legal representatives, or Assignee are aware.

III. Status of Claims

Claims 1-11 were in the application as filed. Claims 1, 3-7, and 11 were previously cancelled without prejudice, and claims 12-20 were added. Claims 2, 8-10 and 12-20, which are presented in the Appendix, are pending in the application and have been twice rejected by the Examiner. Accordingly, Appellants hereby appeal the final rejection of claims 2, 8-10 and 12-20.

IV. Status of Amendments

An amendment of claims 12, 15, 17, and 19 was filed subsequent to final rejection, and all amendments have been entered.

V. Summary of Claimed Subject Matter

The invention is a method of cleaning dishes in a dishwasher in accordance with a programmed wash cycle. *Application, ¶0010.* The wash cycle is implemented by a central control unit and comprises a rinse step where a rinse liquid is recirculated in the dishwasher and a cleaning step where a wash liquid is recirculated in the dishwasher. *Application, ¶¶0011-0023, 0034-0036.* The method comprises determining a solubility of soil on the dishes to be cleaned, and setting at least one operating parameter of the cleaning step based on the determined solubility. *Application, ¶0035.*

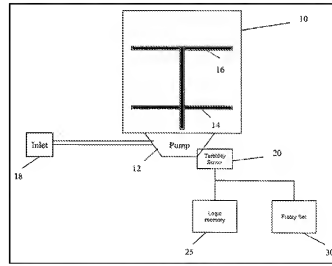

FIGURE 1 OF APPLICATION

The dishwasher has a tub 10. A circulation pump 12 supplies liquid to a pair of spray arms 14, 16 mounted in the tub 10. A water drain shaft or inlet shaft 18 in the bottom of the tub 10 supplies liquid to the circulation pump 12 which has outputs connected to the spray arms 14, 16. A turbidity sensor 20 is incorporated into the inlet shaft 18 so that the turbidity of the inlet flow into the pump 12 can be measured. The turbidity sensor 20 is operably connected to a central control unit. *Application, ¶0010.*

During a pre-rinse step, input values are transmitted from the dishwasher sensor system, including the turbidity sensor 20, to the central control unit. These include the current temperature of the rinsing liquid, the inlet temperature of fresh water introduced into the dishwasher, the turbidity of the rinsing liquid, the foam load in the rinsing liquid, the increase in the turbidity of the rinsing liquid, and the length of time during the rinsing operation until the increase in the turbidity has achieved the value of zero. *Application, ¶¶0011-0016.* The central control unit uses the input values to derive output values. These include the turbidity of the rinsing liquid, the particle load in the liquid, the solubility of the soil adhering to the dishes, the required wash and rinse liquid temperatures, and the required length of the rinsing operation. *Application, ¶¶0017-0022.* The further course of the wash and rinse operation is established in the central control unit based upon these output values. *Application, ¶0023.*

The solubility of the soil adhering to the dishes is a function of the temperature of the rinsing liquid and the length of time during the rinse operation until the increase in turbidity is zero. *Application, ¶0034.* A relatively low rinse liquid temperature and short rinse time until the change in turbidity is zero will indicate a relatively soluble soil. *Ibid.* Conversely, a relatively high rinse liquid temperature and long rinse time until the change in turbidity is zero will indicate a relatively insoluble soil. *Ibid.*

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

In the Office Action of November 23, 2005, and the Advisory Action of March 3, 2006, the Examiner rejected claims 2, 8-10, and 12-20 under 35 U.S.C. §103(a) as allegedly obvious over U.S. Patent No. 3,888,269 to Bashark ("Bashark") in view of U.S. Patent No. 5,586,567 to Smith et al. ("Smith"). Appellants disagree with the Examiner's assertion that the Bashark and Smith references render claims 2, 8-10, and 12-20 obvious to one skilled in the art.

VII. ARGUMENT

1. Rejection Under 35 U.S.C. §103(a)

The following rules for combining prior art references for a finding of obviousness apply to the grounds of rejection.

> A claimed invention is unpatentable if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art....The ultimate determination of whether an invention would have been obvious under 35 U.S.C. §103(a) is a legal conclusion based on underlying findings of fact.[1]
>
> A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field....Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher."
>
> Most if not all inventions arise from a combination of old elements....Thus, every element of a claimed invention may often be found in the prior art....However, identification in the prior art of each

[1] The underlying factual inquiries include (1) the scope and content of the prior art; (2) the level of ordinary skill in the prior art; and (3) the differences between the claimed invention and the prior art. *Graham v. John Deere Co., 383 U.S. 1, 17, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966).*

> individual part claimed is insufficient to defeat patentability of the whole claimed invention....Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant....Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference.
>
> The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved....In addition, the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references....The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art....Whether the Patent Office Examiner relies on an express or an implicit showing, the Examiner must provide particular findings related thereto....Broad conclusory statements standing alone are not "evidence."

In Re Werner Kotzab, 217 F.3d 1365; 55 U.S.P.Q.2d (BNA) 1313 (Fed. Cir. 2000) (citations omitted).

U.S. Patent No. 3,888,269 to Bashark

Bashark discloses a turbidity/dryness sensor 26 mounted in the sump portion 24 of a dishwasher chamber 12 wherein the degree of turbidity of the dishwashing liquid is determined based upon outputs from the turbidity/dryness sensor 26. The turbidity is used to modify a predetermined operating cycle comprising one or more pre-set rinse steps. For example, a user may select either a rinse only, or a rinse-dry cycle.

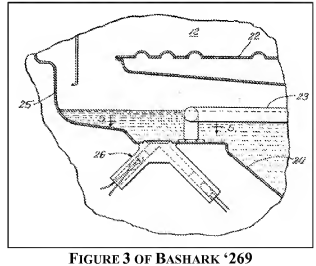

FIGURE 3 OF BASHARK '269

The first step of the rinse only cycle is a fill of the chamber 12 followed by pumping of the liquid against the dishes by a spray arm 22. The spray is then discontinued while the turbidity/dryness sensor 26 is utilized to determine the turbidity of the liquid. If the turbidity so sensed is above a preselected turbidity value, the cycle is completed by again pumping the liquid through the spray arm 22. At the end of this time, the liquid is drained and a second charge of liquid is delivered to the chamber 12. The liquid is then sprayed against the dishes, and the second quantity of liquid is drained. *Col. 9, ln. 2-25.*

If the turbidity of the liquid sensed during the first rinse step is below the preselected turbidity value, the cycle continues with a spray operation followed by a drain. *Col. 9, ln. 26-34.*

Alternatively, the user may select a full wash cycle. The first step comprises a fill of rinse liquid, a pump spray operation, and a drain of the first rinse liquid. The second step is then initiated comprising a refill of rinse liquid, a pump spray, and operation of the turbidity/dryness sensor to determine the turbidity of the second rinse liquid. If the rinse liquid turbidity is less than a preselected turbidity value, detergent is released into the rinse water, thereby converting the rinse step to a wash step. This wash step is then continued followed by a drain. Two successive rinse operations are then completed by a first refill of rinse liquid, a pump spray, a drain, a second refill of rinse liquid, a pump spray, and a drain. *Col. 9, ln. 44-65.*

If the turbidity determination indicates that the liquid is above a preselected turbidity value, the second rinse step is continued as a rinse operation followed by a drain, a refill of the tub with a rinse liquid, followed by a pump spray. The turbidity is again determined, and if the turbidity is now less than the preselected turbidity value, the operation is completed by delivering detergent into the liquid, thereby converting the rinse step to a wash step. This wash step is then continued, followed by a drain. This is followed by two successive rinses as described above. *Col. 10, ln. 5-21.*

If the turbidity sensed during this second turbidity determination is greater than the preselected turbidity value, a third rinse step is effected by completing the cycle subsequent to the turbidity determination by a pump spray and a drain. Upon completion of the third rinse step, the wash step is initiated by filling of the tub with liquid, delivering detergent into the

liquid, continuing the pump spray, and draining the wash liquid. The operation is continued by providing two additional rinse steps as described above. *Col. 10, ln. 22-36.*

U.S. Patent No. 5,586,567 to Smith et al.

Smith describes a dishwasher 10 having a turbidity sensor 25 which is installed in a housing below a sump 13, and defines turbidity as "a measure of the suspended and/or soluble soils in the fluid that causes light to be scattered or absorbed." *Col. 3, ln. 51-53.* Turbidity values obtained at various times during the operation of the dishwasher 10 are used to modify the wash and rinse cycles depending on the degree of soiling of the items being cleaned. *Col. 5, ln. 27-32.* A turbidity determination is made while the dishwasher 10 is paused in order to minimize the generation of bubbles in the dishwashing fluid during the turbidity sensing. *Col. 5, ln. 11-14.* The turbidity sensor 25 is calibrated against clean water after introduction of the water into the dishwasher 10 but before initiation of the circulation of the liquid. *Col. 5, ln. 19-32, 57-67 – col. 6, ln. 1-9.* This enables the sensing operation to accurately determine the turbidity of the wash or rinse liquid after subsequent washing or rinsing steps. No other processing of the data from the turbidity sensor 25 is disclosed in Smith.

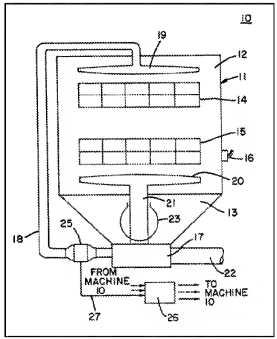

FIGURE 1 OF SMITH '567

Group A: Independent Claim 12

Claim 12 is the sole independent claim and is directed to a method of cleaning dishes in a dishwasher in accordance with a programmed wash cycle implemented by a central control unit, which comprises a rinse step where a rinse liquid is recirculated in the dishwasher, and a cleaning step where a wash liquid is recirculated in the dishwasher. The method comprises

determining a solubility of soil on the dishes to be cleaned, and setting at least one operating parameter of the cleaning step based on the determined solubility.

Claim 12 expressly calls for a method of cleaning dishes in a dishwasher comprising determining a solubility of soil on the dishes, and setting at least one operating parameter of the cleaning step based on the determined solubility. These limitations are not disclosed in either Bashark or Smith, or in a combination of these two references. Thus, the combination of Bashark and Smith does not render claim 12 obvious to one skilled in the art.

The Combination Of Bashark And Smith Fails To Reach The Claimed Invention

Claim 12 calls for determining the solubility of soil on dishes. Nothing in the combination of Bashark or Smith remotely suggests determining the solubility of soil on dishes to be cleaned because neither reference alone or in combination teaches determining the solubility of soil as required by claim 12. Indeed, solubility is not even mentioned in Bashark. Smith makes only a single incidental reference to "soluble" in defining turbidity as "a measure of the suspended and/or soluble soils in the fluid that causes light to be scattered or absorbed." *Col. 3, ln. 51-53* The reference to "soluble" in Smith relates to classifying a type of soil. It does not relate to determining the solubility of the soil.

Bashark describes in some detail a process for modifying dishwasher wash and rinse cycles based upon the output from a turbidity sensor, but this process does not include determining the solubility of soil on dishes. Smith discloses a method for calibrating a turbidity sensor, but this method too does not include determining the solubility of soil on dishes. The most that the combination of Bashark and Smith teach is a method for calibrating a dishwasher turbidity sensor, and a method for using the output from the turbidity sensor to modify the wash and rinse cycles. This is not the invention of claim 12. Thus, the combination of Bashark and Smith fails to reach the claimed invention.

The crux of the rejection is that the Examiner is equating the determination of turbidity as a determination of solubility, which is wholly incorrect and not supported by the combination. A determination of turbidity alone is not a determination of solubility. As described in paragraph

34 of Applicants' application, a temporal characteristic of turbidity, not even the degree of turbidity, is but one parameter of determining solubility. A detailed review of the Examiner's position will be helpful in shining light on this error.

The Examiner supports the rejection by the following assertions:

- "Bashark does not teach the steps and determining the solubility of the soil on the dishes as claimed. Smith et al. teach a turbidity sensing mechanism for a dishwasher. The reference also discloses the turbidity is a measure of the suspended and/or soluble soils in the fluid. See col. 3, lines 51-52. It would have been obvious for one skilled in the art to use the process taught by Bashark to obtain the claimed process, because the steps of measuring the turbidity as taught by Bashark will include determining the solubility of the soil as claimed. The steps as claimed are inherent in the Bashark process. This is also because the degree of turbidity depends on the amount of soil been [sic] found on the dishes." See Bashark, col. 3, lines 3-20. *Final Office Action, November 23, 2005, p. 4-5.*
- "[B] y measuring the turbidity, one skilled in the art would measure the solubility of soil on the dishes. This is because some of the soil will dissolve in the liquid when measuring the turbidity, and determining the solubility of the soil will be inherent in the Bashark in combination with Smith et al. process." *Advisory Action, February 1, 2006, continuation sheet.*
- "Applicant's argument... is unpersuasive, for the reason set forth before in the final rejection, and for the reasons set forth in Smith et al., col. 3, lines 51-53. This is because the reference defines the turbidity as a measure of soluble soils." *Advisory Action, March 3, 2006, continuation sheet.*

It is evident that the Examiner is equating turbidity with solubility and concluding that measuring turbidity necessarily determines the solubility of soil on the dishes. However, this is an unsupportable position.

"Turbidity" is defined as "turbidness." *The Oxford English Dictionary, 2nd Ed.,*

Clarendon Press (1991). "Turbidness" is defined as "the quality or condition of being turbid; the thickness of a fluid; cloudiness." *Ibid*. "Turbid" is defined as "thick or opaque with suspended matter; not clear; cloudy, muddy." *Ibid*.

"Solubility" is defined as "the quality or property of being soluble." *Ibid*. "Soluble" is defined as "capable of being melted or dissolved." *Ibid*.

These definitions make clear that turbidity is not equivalent to solubility. Turbidity is a characteristic of a liquid containing a suspended material. Solubility is a characteristic of the solid material itself. While there may be a correlation between the solubility of a material and the resulting turbidity of a liquid in which the material is dissolved, this does not mean that turbidity and solubility are equivalent. The same magnitude of turbidity can result from a small quantity of relatively soluble material or a large quantity of relatively insoluble material. Therefore, turbidity alone does not define solubility. This is further substantiated by the Application and references themselves.

The application provides that the solubility of the soil adhering to the dishes is a function of the ***temperature*** of the rinsing liquid and the ***length of time*** during the rinse operation until the increase in turbidity is zero. For ease of description in this brief, this length of time will be referenced as the stabilization time.

The magnitude of the turbidity is not determinative of solubility. It is the stabilization time that is a parameter in determining solubility. While one needs to know the magnitude of turbidity to determine the stabilization time, the magnitude of turbidity at any time during the process, including at the stabilization time, is irrelevant to solubility. The turbidity could have a large or small magnitude at the time the turbidity value stops increasing. For example, the magnitude of the turbidity could be 1 or 100 at the time the turbidity no longer increases, yet each could have the same stabilization time. Simply measuring the magnitude of turbidity as taught by the combination at any time, including the stabilization time, will provide no information on the solubility of the soil adhering to the dishes. Thus, the magnitude of the turbidity value is not linked to the solubility.

As there is no link or relationship between the turbidity magnitude and solubility, solubility is also not inherent from the turbidity magnitude. Knowing the turbidity value even at the point where the turbidity stops increasing does not tell you anything about solubility. Rather, it is the stabilization time that is linked to solubility. Therefore, solubility is a derived quantity using more than just turbidity and cannot be directly or inherently determined from the magnitude of solubility.

The combination relied on by the Examiner only looks at the magnitude of the turbidity, and as such the combination is not capable of determining solubility. The combination through the teaching of Smith defines turbidity as a measure of the soluble soils in the fluid. However, this simply recognizes that turbidity is a function of the quantity of soluble material in the fluid, and is consistent with the definition of turbidity cited above. Determining the magnitude of turbidity does not fill in the logical void necessary to reach determining solubility. Therefore, the combination in no way equates turbidity with the solubility of the soil. It merely recognizes that the soil must be sufficiently soluble to be in the fluid.

The Examiner asserts that "the steps of measuring the turbidity as taught by Bashark will include determining the solubility of the soil." However, the Examiner offers nothing to support this conclusion. Indeed, as discussed above, measuring turbidity will not include determining the solubility of the soil. Measuring turbidity will simply indicate that there is soluble matter in the liquid. It will indicate nothing of the solubility of the soil on the dishes.

The Examiner also asserts that measuring solubility is inherent in determining turbidity. This is categorically incorrect. As discussed above, there is no inherent correlation between turbidity and solubility that can provide a definitive quantification of solubility strictly on the basis of turbidity, and the Examiner has offered none. According to the Manual of Patent Examining Procedure, §2112:

> In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).* The

> fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).* To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' *In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).*

The Examiner has failed to satisfy these requirements by failing to offer any factual grounds or technical reasoning to support the assertion that measuring solubility is inherent in determining turbidity. Indeed, as discussed above, the Examiner could not offer such factual grounds or technical reasoning because measuring solubility is not inherent in determining turbidity. The Examiner's assertion that measuring solubility is inherent in determining turbidity must be rejected.

The method of claim 12 calls for determining a solubility of soil on the dishes. The combination of Bashark and Smith does not disclose determining the solubility of soil on dishes. Thus, the combination of Bashark and Smith does not render claim 12 obvious to a person of ordinary skill in the art.

Claim 12 also calls for setting at least one operating parameter of a cleaning step based on the determined solubility. As discussed above, neither Bashark nor Smith discloses determining the solubility of soil on dishes. Thus, neither Bashark nor Smith discloses setting an operating parameter based upon a determined solubility. Bashark discloses modifying wash and rinse cycles based upon the output from a turbidity sensor, but Smith does not disclose adjusting the operation of a dishwasher based upon turbidity determinations. The combination of Bashark and Smith does not reach this requirement of claim 12. Thus, on these grounds, the combination of Bashark and Smith does not render claim 12 obvious to a person of ordinary skill in the art.

The Combination of Bashark with Smith is Improper

In addition to the combination not reaching claim 12, the Examiner has failed to identify any motivation, suggestion, or teaching of the desirability of combining Bashark and Smith to arrive at Applicants' invention. There has been no statement identified in the prior art, there has been no discussion of the knowledge of one of ordinary skill in the art or the nature of the problem to be solved, there has been no identification of what the combined teachings, the knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to one of ordinary skill in the art as required for an implicit showing of motivation. The Examiner has failed to provide any particular findings related to any motivation, suggestion, or teaching of the desirability of combining Bashark and Smith. Rather, the Examiner has simply relied upon "broad conclusory statements standing alone," which can only lead to the conclusion that the Examiner is simply relying on impermissible hindsight reconstruction of Applicants' invention.

As discussed above, the Examiner supports the combination of Bashark and Smith by asserting that it would have been obvious for one skilled in the art to use the process taught by Bashark to arrive at the process of claim 12 because the steps of measuring the turbidity as taught by Bashark will include determining the solubility of the soil as claimed, and are inherent in the Bashark process. However, as discussed above, measuring turbidity will not include determining the solubility of the soil, and determining solubility is not inherent in measuring turbidity. Thus, the Examiner's rationale for combining Bashark and Smith is flawed and should be rejected.

Claims 2, 8-10, and 13-20 depend directly or indirectly from claim 12. As claim 12 is not obvious over Bashark in view of Smith, claims 2, 8-10, and 13-20, which include the limitations of claim 12, are not obvious over Bashark in view of Smith. Nevertheless, claims 2, 8-10, and 13-20 are independently patentable over Bashark in view of Smith.

The dependent claims will now be individually addressed where warranted with respect to the combination.

Group B: Claim 15

Claims 15 addresses which of the operating parameters is set in response to the determined solubility. These operating parameters are listed as setting the duration of the cleaning step, setting the water temperature of the cleaning step, setting the volume of water for the cleaning step, and setting a quantity of a cleaning agent based upon the determined solubility. The combination does not disclose setting of any of the listed operational parameters based on the determined solubility. It would not be obvious to do so in view of the combination as the combination does not disclose setting any parameter, let alone the listed parameters, based on the solubility.

Group C: Claim 8

Claim 8 further refines a subset of the listed parameters of claim 15 by continuously controlling the duration of the cleaning step and the water temperature between minimum and maximum values as a function of the turbidity of the liquid and the determined solubility. The combination does not disclose these operations. The combination does not teach or suggest a the claimed continuous control between the minimum and maximum values as described. Such control would not be obvious in view of the combination because the combination is devoid of any such operational control. One cannot infer from nothing.

Group D: Claims 9 and 10

Claims 9 and 10 are addressed to using a fuzzy set in a central control unit for determining solubility, and using fuzzy rules to adapt the fuzzy set to changes in the rinse step. Neither of these requirements is disclosed in either Bashark or Smith. Thus, claims 9 and 10 are independently patentable over Bashark in view of Smith.

Group E: Claim 16

Claim 16 is addressed to the determination of solubility of soil on dishes by determining a temperature of the rinse liquid, a turbidity characteristic of the rinse liquid, or both. As

discussed above, neither Bashark nor Smith of the combination discloses determining the solubility of soil on dishes as called for in claim 16. While Bashark and Smith disclose measuring the turbidity of a liquid, neither reference discloses determining the solubility of the soil based upon the turbidity, or determining the temperature of the rinse liquid as a part of the solubility determination. Thus, claim 16 is independently patentable over Bashark in view of Smith.

Group F: Claims 17-18

Claims 17 depends from claim 16 and further defines the turbidity characteristic as the length of time required for the turbidity to stop increasing. Neither Bashark nor Smith of the combination discloses determining a length of time required for the turbidity to stop increasing. Therefore, the combination teaches nothing about determining when the time it takes for the turbidity to stop increasing. It would not be obvious to one of ordinary skill in the art to determine this time as claimed in light of the combination that teaches sensing only the turbidity at a predetermined time in the cycle. As such claims 17 and 18 is patentable over the combination.

Group G: Claims 19-20

Claim 19 further defines how the time for determining when the turbidity stops increasing by calling for determining a difference in turbidity measurements associated with a selective operation of an upper spray device and lower spray device. The combination does not teach such a selective operation, let alone using such a selective operation to determine when the turbidity has stopped increasing by looking at the difference value. The claimed methodology would not be obvious to one of ordinary skill in the art in light of the failure of the combination to even teach the basic concept of determining solubility, let alone determining solubility by the claimed method of claim 19. Therefore, claim 19 is patentable over the combination.

CONCLUSION

In view of the foregoing, it is submitted that the continuing rejection of claims 2, 8-10, and 12-20 is improper and should not be sustained. Therefore, a reversal of the rejection of claims 2, 8-10, and 12-20 is respectfully requested.

Respectfully submitted,
CLEMENS JUNG ET AL.

Dated: April 21, 2006

By: /Mark A. Davis/
Mark A. Davis, Reg. No. 37, 118
Michael F. Kelly, Reg. No. 50,859
MCGARRY BAIR PC
171 Monroe Avenue, NW, Suite 600
Grand Rapids, Michigan 49503
616-742-3500

VIII. CLAIMS APPENDIX

1. Cancelled.

2. The method according to claim 13, wherein the pre-rinse step comprises one of heating or not heating the rinse liquid.

3-7. Cancelled

8. The method according to claim 15, wherein the duration of the cleaning step and the water temperature of the cleaning step are continuously controlled between a minimum value and a maximum value as a function of the turbidity of the rinse liquid and the determined solubility.

9. The method according to claim 13, wherein a fuzzy set is used in the central control unit for determining the solubility.

10. The method according to claim 9, wherein fuzzy rules are programmed in a programmable memory of the central control unit in order to adapt the fuzzy set to changes in the rinse step.

11. Cancelled

12. A method of cleaning dishes in a dishwasher in accordance with a programmed wash cycle implemented by a central control unit and comprising a rinse step where a rinse liquid is recirculated in the dishwasher and a cleaning step where a wash liquid is recirculated in the dishwasher, the method comprising:

determining a solubility of soil on the dishes to be cleaned; and

setting at least one operating parameter of the cleaning step based on the determined

solubility.

13. The method according to claim 12, wherein the determination of solubility occurs during a pre-rinse step.

14. The method according to claim 13, wherein the pre-rinse step comprises a portion of the rinse step.

15. The method according to claim 12, wherein the setting of the at least one operation parameter comprises setting at least one of a duration of the cleaning step, a water temperature of the cleaning step, a volume of water during the cleaning step, and a quantity of cleaning agent.

16. The method according to claim 12, wherein determining the solubility of the soil on the dishes comprises determining at least one of a temperature of the rinse liquid and a turbidity characteristic of the rinse liquid.

17. The method according to claim 16, wherein the determining of the turbidity characteristic of the rinse liquid comprises determining a length of time required for the turbidity to stop increasing during the rinse step.

18. The method according to claim 17, wherein determining the length of time for the turbidity to stop increasing comprises obtaining at least one measurement from a turbidity sensor.

19. The method according to claim 18, wherein determining the length of time for the turbidity to stop increasing comprises determining a difference in turbidity measurements associated with a selective operation of an upper spray device and a lower spray device.

20. The method according to claim 19, wherein the selective operation of the upper spray

device and the lower spray device comprises alternately operating the upper spray device and the lower spray device.

IX. EVIDENCE APPENDIX

No evidence has been entered by the Examiner or Appellants into the record.

X. RELATED PROCEEDINGS APPENDIX

There being no decision rendered by a court or the Board in any related proceeding, none is listed here.